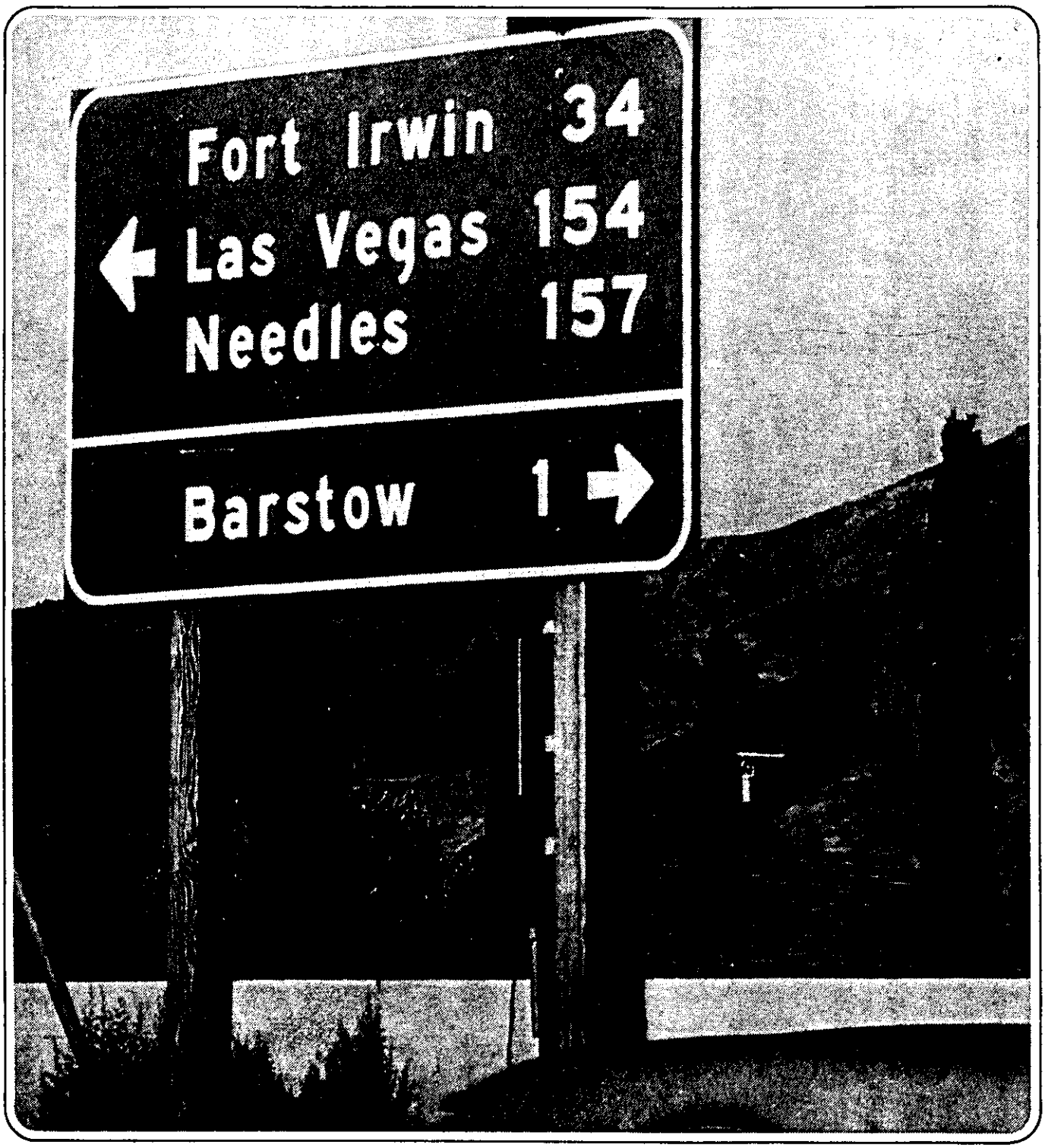

Chapter 5

Alternatives to the Proposed Action

market area would increase relative to the proposed program by 94% under Option 1, remain the same under Option 2, and decrease by 56% under Option 3. Option 1 would increase the requirements on the Barstow water supply.

5.3 ALTERNATIVES AT LOCATIONS OTHER THAN FORT IRWIN

5.3.1 National Training Center - Alternative Site Analysis

Several alternative sites were studied to determine whether they could accommodate National Training Center activities. Of these, only three - Fort Irwin, California; Marine Corps Base Twentynine Palms, California; and Yuma Proving Ground, Arizona - were found to be suitable. A summary of this study is presented below.

The National Training Center - Alternative Site Analysis (Headquarters of the United States Army Forces Command, Fort McPherson, Georgia, hereafter referred to as "National Training Center - Alternative Site Analysis") addresses in detail seven service installations which have acreage sufficiently large to accommodate operations envisaged at the National Training Center. A review of all military installations in the continental United States shows only these seven to have at least the required acreage of 400,000 as a combination of maneuver area and range area. These installations are:

o	Fort Bliss, Texas	880,000 Acres
o	Dugway Proving Ground, Utah	738,000 Acres
o	Fort Irwin, California	462,000 Acres
o	Naval Weapons Center, China Lake, California	494,000 Acres
o	Pueblo Army Depot, Colorado	500,000 Acres
o	Twenty-Nine Palms Marine Base, California	596,000 Acres
o	Yuma Proving Ground, Arizona	584,000 Acres

(Pueblo Army Depot does not currently have this acreage. Three ranchers have offered 250,000 acres for purchase at $80/acre. The ranchers believe more packages could be bought up to double the acreage.)

There are four other sites which do not have the optimum acreage, but have other advantages that make them subject to detailed consideration. Two are United States Army installa-

tions and two are Canadian Army training areas. Suffield, Alberta and Shilo, Manitoba are the Canadian training areas: Suffield has 350,000 acres that are maneuverable and Shilo has 103,000 acres. While neither measures up to the optimum acreage required for the National Training Center, both are discussed in the Analysis because they are currently used by the British and German Armies, respectively, as off-shore training areas for mechanized and armored forces. The two Army installations examined are Fort Hood and Fort Drum: Fort Hood because it has two armored divisions stationed thereon and Fort Drum because it is the largest semi-active station in the continental United States and is perceived to be relatively remote.

The purpose of the Alternative Site Analysis was to determine whether or not any of these installations is a feasible site for the National Training Center from an operational standpoint only. Those sites found to be feasible (provided interoperability problems are resolved) are discussed later from an environmental viewpoint. Several possible sites were ruled out and three were found feasible.

- Fort Bliss, Texas - (Contiguous to El Paso, Texas). Not feasible due to the doubtful availability of McGregor Range for live-fire maneuvers, cluttered electromagnetic spectrum, lack of challenging terrain, difficulty of obtaining close air support and lack of good inter-operability with the United States Air Force "Red Flag" program at Nellis Air Force Base. ("Red Flag" is explained in detail on Page 4, "National Training Center Alternative Site Analysis".)

- Dugway Proving Ground, Utah - (In Tooele County, 60 air miles southwest of Salt Lake City). Not feasible due to lack of year round trafficable maneuver area, lack of challenging terrain and lack of good inter-operability with the United States Air Force "Red Flag".

- Fort Irwin, California - (In the high Mojave Desert, 37 miles northeast of Barstow in San Bernardino County). Feasible with resolution of electromagnetic spectrum interface with Goldstone Deep Space Tracking Station.

- Naval Weapons Center, China Lake, California - (In the high Mojave Desert, 120 air miles northeast of Los Angeles in Kern, Inyo and San Bernardino Counties). Not feasible due to mutual interference between National Training Center and the United States Navy testing operations. If Navy operations were relocated, maneuver boxes would still be only marginally suitable and operations would need to be extended into Fort Irwin

reservation to achieve training goals. Approaches to maneuver boxes are shorter coming from Fort Irwin's cantonment than from the Naval Weapons Center.

- Pueblo Army Depot, Colorado - (Ten miles east of Pueblo, Colorado). Not feasible due to severe restriction of useable maneuver space and air space, lack of challenging terrain, electromagnetic spectrum clutter, and inadequate range area for live-fire maneuver.

- Marine Corps Base Twenty-Nine Palms, California - (In the southern tip of the Mojave Desert, 60 air miles northeast of Palm Springs in San Bernardino County). Not feasible due to inability of base to accommodate both proposed Army and United States Marine Corps operations simultaneously. However, if interoperability problems were not present, the site could be considered feasible.

- Yuma Proving Ground, Arizona - (In the Sonoran Desert, approximately 30 air miles from Yuma). Not feasible due to the inability of the post to accommodate both developmental testing and National Training Center operations simultaneously. However, if intropera bility problems were not present, site could be considered feasible.

- Fort Hood, Texas - (In east-central Texas, between Waco and Austin in Coryell and Bell Counties). Not feasible due to lack of sufficient maneuver area, limited close air support and cluttered electromagnetic spectrum.

- Fort Drum, New York - (In upper-western New York State, nine miles from Watertown, in Jefferson and Lewis Counties). Not feasible due to lack of adequate maneuver area, difficulty of close air support and lack of full-power jamming capability.

- British Army Training, Unit Suffield, Canada - (In the southeast corner of Alberta Province, about 30 miles east-southeast of Calgary). Not feasible due to training year being limited to six months because of severe weather, lack of interoperability with present mission, and difficulty of close air support.

- Canadian Forces Base, Shilo Wohnteil, Canada - (In southwest Manitoba, about 60 air miles north of North Dakota - Canadian border near town of Brandon). Not feasible due to restrictive size of available maneuver/range area, short training year, lack of interoperability with present mission and difficulty of close air support.

The small number (three) of sites identified indicates the importance of having sufficient maneuver area and range for firing weapons. Further, the choice is narrowed somewhat by taking into consideration the requirement for challenging terrain and those criteria dealing with the third and fourth dimensions - air space and the electromagnetic spectrum. Although no site categorically meets these and all other needs, Fort Irwin does emerge as the operationally most feasible location which has enough challenging and adequately configured land area available to accommodate the National Training Center. Yuma Proving Ground and Twenty-Nine Palms would also be feasible but are presently being used for other purposes.

Thus, three potential sites have been determined. Fort Irwin has been discussed in the bulk of this report. Marine Corps Base Twenty-Nine Palms and Yuma Proving Ground are the two alternatives which are also considered feasible and will be discussed in the remaining portion of this chapter.

Table 3 compares the general impact to current operations of locating a National Training Center at each of the three possible locations. A plus sign (+) indicates an increase, and a negative sign (-) indicates a decrease from present levels of usage.

5.3.2 Marine Corps Base Twenty-Nine Palms, California

An explanation of the environmental impact of locating the National Training Center at Marine Corps Base Twenty-Nine Palms is in Appendix C. For further information concerning environmental impacts at Marine Corps Base, Twenty-Nine Palms, see The Environmental Impact Assessment prepared for Joint Readiness Exercise Brave Shield 77, dated April 1977, on file at Marine Corps Base Twenty-Nine Palms, California, United States Readiness Command, MacDill Air Force Base, Florida and United States Marine Corps Headquarters, Washington, D.C.

A. Probable Adverse Environmental and Socioeconomic Effects

Major adverse environmental effects could be expected on soils, vegetation and the socioeconomic well being of the community. Minor adverse impacts could be expected in air quality, wildlife, archaeology waste disposal, electromagnetic transmissions and sound. Specific adverse effects are as follows:

- Soils - The compaction of surface area in the tracks of vehicles, accelerated erosion from the "channelization" effect of runoff waters in vehicle tracks and aeolian removal of disturbed topsoils would have a localized long-term effect on soil stability.

Table 3. 1984 Impacts of National Training Center As Compared to Present Facility

	Fort Irwin	MCB Twenty-Nine Palms	Yuma Proving Ground
Employment	Increase	Decrease	Increase/Decrease
- Military	+2,374 jobs	-3,458 jobs	+2,030
- Civilian	+ 318 jobs	- 285 jobs	- 262
Population (military and dependents)			
- On-Base	+3,378 persons	-2,494 persons	+ 518 using existing
- Off-Base	+3,246 persons	-1,470 persons	+4,591 - base housing
Housing Spaces	+ Renovation (on-base) +964 net (off-base)	3,599 excess spaces on base	+3,496 net on/off base
Current Person Spaces On Base	3,378 spaces	9,428 spaces	1,238 spaces
School Children			
- On-base	+ 396 capacity if school reopened	ø	+ 306
- Off-Base	+ 936	Decrease	+ 282
Public School Capacity	11,000, not full	Full	Full
Water Use on Base	Increase	Decrease	Decrease
- Current	144 million gallons/year	912.5 million gallons/year	355 million gallons/year
- Supply	200+ years**	20 years at current use	1.6 billion gallons/year
Sewage	Increase	Decrease	Decrease
- Current Volume	132.5 million gallons/year	438 million gallons/year	319 million gallons/year
- Capacity	Inadequate	912.5 million gallons/year	547 million gallons/year
Land Use	Increased intensity	Increased intensity and severity	Increased intensity and severity
Community Impact	Generally Positive	Generall Negative	Initially disruptive, generally positive over long-range

* On-base includes military personnel and dependents, off-base includes military, support, civilian and their families.
** Expected life of water supply available to Barstow (off-post) will decrease.

- Air Quality - Small amounts of oxides of sulfur and nitrogen would be added to the air as a result of weapon firing. Vehicular and aircraft exhaust emissions and dust raised by ground traffic would be widespread. The degradation of air quality would be temporary and should not have an appreciable effect on regional air quality on a long-term basis, especially when compared with the natural effects of high winds.

- Vegetation - Due to vegetation destruction and root damage, a significant loss in plant productivity may be expected. Also a decrease in productivity would result from the construction of new roads and bivouac areas. Further, soil compaction and roadside water runoff would have a deleterious effect on plant productivity. In heavy maneuver areas, significant uprooting and destruction of groundcover, shrubs, and small trees would occur. The reduction and/or loss of local communities of endemic vegetation also would occur at campsites. No endangered species have been observed.

- Wildlife - The disturbance of wildlife and destruction of subsurface burrows of rodents and reptiles is expected to have an effect. Increased noise levels and activity during operations would frighten wildlife, making them easy prey for predators. The cumulative effect of loss of prey in the food chain would result in a long-term reduction of wildlife numbers. A number of state and federally protected species are present.

- Archaeology - The removal of souvenir artifacts and the possible inadvertent destruction of sites not recognizable to anyone but trained specialists would destroy sequential evidence from which archaeologists derive significant in formation. The destruction of open sites would occur from the breaking open of new roads and trails in previously undisturbed areas.

- Electromagnetic Transmissions - The interruption of civilian radio and/or television by military use of electromagnetic equipment would result in adverse local reaction.

- Waste Disposal - The proposed operations would generate large amounts of dry waste, some of which would become windblown litter. Discards of individuals in the field could be expected to contribute to the existing litter.

- o Sound - Inadvertent breaking of the sound barrier by military aircraft would result in an adverse local reaction. The probability of this effect would increase due to increased use of aircraft.

- o Socioeconomic - Since transference of Marine Corps Base Twenty-Nine Palms from United States Marine Corps to the Army would result in 3,766 fewer military and 285 fewer civilian jobs or 47.7% fewer jobs generated by Army activities in relation to present base activities. The local communities would be adversely impacted by loss of related payroll. Housing vacancies would also increase significantly.

B. Probable Benefit

The probable benefit of using Marine Corps Base Twenty-Nine Palms is that drawdown (mining) of the aquifers on Fort Irwin would not occur at an increased rate over present use. The accelerated depletion of existing water supplies in the Barstow area would be avoided.

Groundwater at Twenty-Nine Palms is the sole source of water. United States Geological Survey has maintained an ongoing program to monitor the supply since 1952. Assessments showed a 2.5% (1,800 acre-feet) decline in the Deadman aquifer from 1953 to 1967. Nearly 25,000 acre-feet were pumped during that period. Estimated use of 1,241 acre-feet per year by the National Training Center should create drawdown at less than current rates.

5.3.3 Yuma Proving Ground

An explanation of the environmental impact of locating the National Training Center at Yuma Proving Ground is in Appendix C. For additional information, see the Draft Installation Environmental Impact Assessment dated March 31, 1976, on file at Headquarters, Yuma Proving Ground.

A. Probable Adverse Environmental and Socioeconomic Effects

Major adverse environmental effects could be expected in damage to soils and vegetation. Minor adverse effects could impact on air quality, wildlife and archaeology. A short-term major socioeconomic impact would probably be experienced by Yuma County.

- o Soils - The soils in the selected maneuver areas at Yuma Proving Ground are extremely fragile, owing to the hot desert environment of the post. Compaction of

surface area in the tracks of vehicles, accelerated erosion from the "channelization" effect of runoff waters in vehicle tracks and aeolian removal of disturbed topsoils would have a localized long-term effect on soil stability.

- Air Quality - Small amounts of oxides of sulfur and nitrogen would be added to the air as a result of weapon firing. Vehicular and aircraft exhaust emissions and dust raised by ground traffic would be widespread, but with the density thereby much reduced. The degradation of air quality would be temporary and should not have an appreciable effect on the regional air quality on a long-term basis, especially when compared to the natural effects of high winds.

- Vegetation - Due to vegetation destruction and root damage, a significant loss in plant productivity may be expected. Also, a decrease in productivity would result from the construction of new roads and bivouac areas. Further, soil compaction and roadside water runoff would have a deleterious effect on plant productivity. In heavy maneuver areas, significant uprooting and destruction of ground cover, shrubs and small trees would occur. The reduction and/or loss of local communities of endemic vegetation also would occur at campsites. Because of the hot desert environment, it can be expected that some plants, once destroyed, would not be replaced for one to two generations. A number of state and federally protected species are present.

- Wildlife - The disturbance of wildlife and destruction of subsurface burrows of rodents and reptiles is expected to have an effect. The increase in noise levels and activity during operations may frighten wildlife, making them easy prey. The cumulative effect of loss of prey in the food chain may result in a long-term reduction of wildlife numbers. A number of protected species inhabit the area. The desert bighorn sheep, listed by the Arizona Game and Fish Department as a species whose status may be in jeopardy in the foreseeable future, total about 150 at the Yuma Proving Ground. Implementation of the National Training Center would likely disrupt their movements.

- Archaeology - The removal of souvenir artifacts and the possible inadvertent destruction of sites not recognizable to anyone but trained specialists could destroy sequential evidence from which significant information can be derived. The destruction of open sites may occur from the breaking open of new roads and trails in previously undisturbed areas.

- Electromagnetic Transmissions - Interruption of civilian radio and/or television by military use of electromagnetic equipment may result in adverse local reaction.

- Hydrology - No adverse impact on current or potential water sources is expected even though post population would increase. Capacity exceeds current demand by a factor of four.

- Waste Disposal - The proposed operations would generate large amounts of dry waste, some of which will become windblown litter. Discards of individuals in the field could be expected to contribute to the existing litter.

- Sound - Inadvertent breaking of the sound barrier by military aircraft would result in an adverse local reaction.

- Socioeconomic - The initial impact on Yuma County would be severe due primarily to a rapid influx of both construction workers (with or without families) and military families. All would be competing for housing and services. Present service facilities would be overtaxed and the normal quietude of the towns would be destroyed. Eventually, when residential assets and schoolrooms are built and services increased to meet the demand, the adverse effect would subside and the community would enjoy increased economic benefits.

B. Probable Benefit

The probable benefit of using Yuma Proving Ground is that, again, drawdown (mining) of the aquifers at Fort Irwin would not occur and the accelerated depletion of existing water supplies in the Barstow area would be avoided. A long-term economic benefit would accrue to Yuma County.

5.3.4 Conclusions

In essence, the single environmental benefit gained by using either Marine Corps Base Twenty-Nine Palms or Yuma Proving Ground for the National Training Center rather than Fort Irwin would be conservation of water supplies on the reservation and in the Barstow area.

Other adverse effects would be transferred from the Fort Irwin setting to the other setting. In so doing, significantly greater adverse effects would be experienced at either of the alternative sites. At Marine Corps Base Twenty-Nine Palms the terrain and ecosystem would be subjected to much more intensive and a different type of usage than heretofore.

The same statement can apply to Yuma Proving Ground where test operations are normally confined to areas long in use for testing purposes, and effect on terrain at Yuma Proving Ground would be even greater because of the hot desert setting.

Fort Irwin is currently used for maneuver of battalion-sized mechanized and tank units and has been used inthe same way for 38 years. The only change in using that setting for the National Training Center is an increase in the intensity of use of the same terrain.

Over the years, Marine Corps Base Twenty-Nine Palms has been used primarily for aircraft bombing and artillery ranges. Only in more recent years have tanks and tracked vehicles been used on the terrain and then in a relatively minor way. United States Marine Corps Batalion Landing Teams using the area normally practice fighting on foot. National Training Center operations, being primarily mounted fighting simulation, would subject the terrain to much heavier and more damaging use.

Yuma Proving Ground areas that would be used for National Training Center operations are now primarily used for air-to-ground firing of aircraft armament systems. The area has not been used for heavy tracked vehicle maneuver since the early 1940's. The introduction of National Training Center operations would, therefore, be a totally new use for the setting. Adverse impacts to the terrain would be far more significant than at either Fort Irwin or Marine Corps Base Twenty-Nine Palms because of the more fragile soils and ecosystems.

At either Marine Corps Base Twenty-Nine Palms or Yuma Proving Grounds, ongoing operations would have to be phased out as National Training Center operations are phased in. This would not be the case at Fort Irwin where National Guard operations could continue side-by-side with the National Training Center. Movement of units and activities from the Marine Corps Base and Yuma Proving Ground to other locations would cause personnel to experience both economic and mental stress. Family life would be disrupted and civilian personnel would be subjected to the problems of retraining and possible demotion. Additionally, the new locations selected for units and activities displaced from either the Marine Corps Base or Yuma Proving Ground could very likely be exposed to environmental damage because of a new or increased mission. Thus, a falling domino effect would be created.

By using Fort Irwin for the National Training Center, the present mission is changed only in the intensity of training use. The present users are not displaced: instead, the Guard would experience greater support from the active Army stationed there. Interoperability with the National Aeronautics and Space Administration Goldstone Deep Space Tracking Station could be achieved through cooperation of both parties in sharing the electromagnetic spectrum.

The socioeconomic effects in the three settings are at considerable variance. Barstow could accommodate the impact of the National Training Center, but at the possible cost of reduced water resources. Twenty-Nine Palms and the other towns near Marine Corps Base Twenty-Nine Palms would suffer a decrease in economic benefits because of the reduction in force at the base. Yuma would be heavily impacted by the influx of both military and civilian personnel requiring accommodations (housing-schools-services) off-post. It would take a number of years for this impact to moderate and subside. The long-range socioeconomic impact on Yuma would be beneficial.

It is difficult to weigh the relative effects on the three areas, but it could be said that an increased demand for goods and services is better economically than a decrease. Therefore, the Twenty-Nine Palms area would be more adversely affected than Barstow or Yuma. Socially, it would seem that the initial impact would be much heavier at Yuma because of overcrowding due to a lack of on-post facilities. Further details of the two alternatives studied and the expected impacts of their use as the site for a National Training Center may be found in Appendix C.